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weather the fungus would probably not have a deadly effect.—The attention of our readers has never been called to Baron Osten Sacken's second edition of the Catalogue of the described Diptera of North America, published about a year since by the Smithsonian Institution. It is invaluable as a work of reference.—American students in foreign laboratories do work of as high an order as their German, French or English fellow students of the same schools. No better work in embryology has been done than that comprised in Mr. C. O. Whitman's essay on the embryology of the little leech, *Clepsine*. We now draw attention to the able paper of two recent Princeton graduates, Messrs. Scott and Osborn, who have worked up the early development of the common European newt, published in the *Quarterly Journal of Microscopic Science* for July last, and now issued in pamphlet form.

ANTHROPOLOGY.¹

RAU'S PALENQUE TABLET.—The latest contribution to knowledge issued by the Smithsonian Institution, is No. 331 of its publications, a quarto of seventy-six pages, by Dr. Charles Rau, on the Palenque Tablet in the United States National Museum. The contents of the work are as follows: "Chapter I.—History of the Palenque Tablet; Chapter II.—Explorations of Palenque; Chapter III.—The Temple of the Cross; Chapter IV.—The Group of the Cross; Chapter V.—Aboriginal writing in Mexico, Yucatan and Central America; Appendix.—Notes on the Ruins of Yucatan and Central America." In the first chapter we have a minute relation of the manner in which the tablet found its way from the Temple of the Cross to its present position in the National Museum. In the second chapter Dr. Rau gives a narration of the various explorations of these interesting ruins. The name Palenque is derived from a village about eight miles away, called Santo Domingo del Palenque. The ruins were discovered in 1750, by a party of Spaniards, and surveyed for the first time by order of Ramon de Ordoñez in 1773–1784. The first exploration which lead to any result was that of Capt. Antonio del Rio in 1787; his manuscript was published in London, in 1822, with drawings from Castañeda, the artist of Dupaix. Capt. William Dupaix, in 1808, visited Palenque, with an artist named Castañeda. The MSS. and drawings will be found in Vols. IV, V, VI, of Kingsborough. Baron de Waldeck lived two years at Palenque making surveys and sketches, 1832–4. His plates, with text by De Bourbourg, was published in Paris, in 1866, by the French Government.

When Dupaix visited Palenque the three slabs constituting the Group of the Cross were all in place. But at the time of Waldeck's visit, the right one, now called the Smithsonian Tablet,

¹Edited by Prof. ORIS T. MASON, Columbian College, Washington, D. C.

was in fragments on the floor; the middle one had been carried off to the banks of the river by a vandal who wished to adorn his house with it; and the one on the left was in its original position, which it now occupies. Stephens and Catherwood visited the spot in 1840, and were entertained by Mr. Charles Rusel, our counsel at Laguna. They made drawings of the ruins, and shortly after their visit the fragments of the right hand slab were sent to the National Institute in Washington, where it arrived in 1842. The site has since been visited by Arthur Morelet in 1846, and M. Désiré Charnay, for the French Government, in 1857. The tablet was transferred to the Smithsonian Institution 1858, and in 1863, while making a cast for Prof. Henry, Dr. George A. Matile discovered that this was the missing slab from the Palenque group, not drawn by explorers after Dupaix. It was broken again after Dr. Matile's cast was made, but reconstructed and set in its present frame, from which Dr. Rau's photograph was taken. Whatever doubt may have remained after Matile's argument, is now dispelled by reference to the outline plate of Dr. Rau's work, in which the whole Group of the Cross is again restored.

The occurrence of the sign of the cross in America anterior to its discovery by Columbus, has been the marvel of archæologists. But the fact of its appearance in many places where Christian influence had never been felt, compelled the student to look for other motives in its existence. The whole subject is reviewed in Chapter IV, pp. 39-46. Of equal interest with the allegorical sculpture is the subjects of the hieroglyphics, on which Dr. Rau has bestowed a great deal of faithful study. The supposed key to their interpretation is a MSS. found in the Royal Library of Madrid, by Brasseur de Bourbourg, in 1863, which is a copy of one composed by Diego de Landa, in 1579, and giving, among other things, an alphabet of thirty-three signs. It will be remembered that a similar old MSS. is mentioned by Sr. Orozcoy Berra, in *Anales del Museo Nacional de Mexico*, containing the Lord's Prayer in symbols, partly Aztec and partly ecclesiastic. All attempts to interpret the Central American glyphs and manuscripts by Landa's alphabet have proved failures. Dr. Rau, the most cautious of theorists, does not attempt a solution; but on page 61 gives a diagram of his outline plate, by which every glyph on the tablet may be easily referred to (it is a pity that the letters and figures do not occur on the margin of the plate itself). On pages 62 and 63, some of the glyphs are analyzed, and the places where the elements are to be found, are indicated. The author concludes that the analogies between Landa's signs and the glyphs warrant the suggestion that the inscriptions constitute a chronological record of some kind. On pages 53 and 64 Dr. Rau corrects an error of Humboldt, Kingsborough, Stephens, and others, as to the close relationship between the

Aztecs and ancient Mayas based on the Dresden Codex, which is clearly shown to be of Maya and not of Mexican origin at all.

On page 75 the author reaffirms the view of Stephens, Bancroft, as well as his own, "that the Yucatan structures were built by the Mayas, the direct ancestors of the people found on the peninsula at the Conquest, and of the present native population."

ANTHROPOLOGICAL NEWS.—Mr. H. R. Howland is the author of a brochure entitled "Primitive Arts and Modes of Life," the substance of which was read before the Buffalo Society of Natural Sciences, March 15, 1879. The object of the author is to show how, in simple beginnings, out of the dire needs of humanity, have been born the arts of life as known to civilized man; how with patient toil he has wrought out, by means God-given, the problem of his growth and their advancement.

A printed notice of four pages, announces the formation, in Boston, of the "Archæological Institute of America," for the purpose of promoting and directing archæological investigation and research, by sending out expeditions for special researches, by aiding the efforts of independent explorers, by publication of reports of the results of expeditions which the institute may undertake or promote, and by any other means which may from time to time appear practicable. The institute consists of life members contributing at one time \$100, and of annual members paying \$10 per annum. Membership is now open to all persons interested in the objects of the institute, and who may desire to join it. The call is signed by Francis Parkman, W. W. Goodwin, Alexander Agassiz and other distinguished scholars. Prof. C. E. Norton is president, and Mr. Edward H. Greenleaf, Museum of Fine Arts, Boston, Mass., secretary, to whom all communications should be addressed.

"The Aboriginal Soapstone Quarries in the District of Columbia" is the title of a brochure from the Twelfth Annual Report of the Peabody Museum of Archæology and Ethnology, by Elmer R. Reynolds. The discovery of the soapstone quarry at Chulu, Amelia county, Virginia, seems to have kindled a great deal of enthusiasm in our archæologists with reference to aboriginal quarrying and mining. Dr. Reynolds is an indefatigable hunter, and his success in discovering soapstone quarries in the District of Columbia, almost under the shadow of the National Museum, is graphically described in the pamphlet before us.

The Society of Biblical Archæology has for its object the study of the languages, remains and natural history of those lands with which the Jews were associated, from the earliest times to the close of the canon of Scriptures, with a view to the better understanding of the Old and New Testament. In point of fact the history of the Jewish race demands an intimate acquaintance with the civilizations of the Nile valley, Mesopotamia, the slopes of the Lebanon range, and, in latest Biblical times, of that of Greece

and Rome. The society has for its president Dr. Samuel Birch, the Egyptologist, and includes many of the most distinguished men in England among its members. The honorable secretary for foreign correspondence is the Rev. A. H. Sayce. An acquaintance with its publications is indispensable to those who wish to pursue the study of Oriental archæology.

The first number of Vol. ix of "The Journal of the Anthropological Institute of Great Britain and Ireland, August, 1879," contains the following papers: Exhibition of the cranium of a Native of one of Fiji islands, by Prof. Flower; The Primitive Human Family, by C. Staniland Wake; On an *Echelle de Couleurs*, published by the Société Sténochromique of Paris, by E. W. Brabrook; Remarks on the Geographical Distribution of Games, by Edward B. Tylor; On some Rock Carvings found in the neighborhood of Sydney, by Sir Charles Nicholson; Relationships and the names used for them among the peoples of Madagascar, chiefly the Hovas, together with observations upon marriage customs and morals among the Malagasy, by the Rev. James Seabee, Jr.; History of the South-western Barbarians and Chaou-Seën, translated from the "Tseen Han Shoo," book 95, by A. Wylie, Esq.; Rag-Bushes and kindred observances, by M. J. Walhouse (See "Fetish or Rag-Bushes in Madagascar," *Saturday Magazine*, Nov. 22).

Mr. Wake's paper is a continuation of the author's discussion of a kindred subject in Vol. VIII, of the *Journal*. After reviewing Mr. McLennan's theory of the origin of society in polyandry, he adds, "We cannot suppose that the primeval group of mankind consisted only of a woman and her children; and if the woman had a male companion, we cannot doubt, judging from what we know of savage races, that he would be the head and chief of the group. * * * Self interest chiefly would govern the father in connection with the marriage of his daughter. Whether the marriage was to be a permanent or a terminable engagement, he would stipulate that they should continue to live with or near him, and that her children should belong to him as the head of the family group. In this case, not only would the children form part of the family to which their mother belonged, but the husband himself would become united to it, and would be required to labor for the benefit of his father-in-law. When the wife left her father's house to reside with her husband, he had to purchase the privilege by giving her father and other relatives handsome presents. [This could hardly have occurred at first, when property was not held in severalty. It marks a higher step in culture]. In this case the children belonged to their father's family, and the fact of the wife going to reside among her husband's relatives meant the loss of the children by *her* father's family. The presents may, therefore, be supposed to represent the price given by a man for his wife's offspring to her relatives. Probably the wide-spread

custom of pretended forcible marriage was originally thus connected with the rights of the woman's relatives, and may have originated in the desire to obtain for nothing what could otherwise be acquired only by a purchase fee.

These rights, according to Morgan, are inheritance of the property of deceased members, reciprocal obligations of help, defence, and redress of injuries, and the obligation not to marry in the *gens*, although practically, the property was appropriated by the nearest of kin. Morgan says nothing of any right of the *gens* over the marriage of its members, and it would seem not to have had any voice in the matter. Reference to the custom of blood-revenge confirms the view that, for certain purposes, a smaller family group than the *gens* is recognized by the people having that organization. The example of the Polynesians, who are said not to have arisen to the conception of the *gens*, shows that before this was developed, not only was the *lex talionis* recognized, but the law of marriage and the rights of parents over their children were fully established. It is evident, therefore, that the primitive family cannot have originated with the *gens*, or clan; on the contrary, the clan was based on the family or group of kinsmen, which would be a parent, his wife or wives; their daughters, together with the husband and children of the latter.

The view of the ancient family held by De Coulange and Sir Henry Maine would be complete if it provided for the fact, that descent was originally traced by the female line in preference to the male line. The defect thus revealed will be removed if it can be shown that descent through the male is for certain purposes recognized equally with that through the female." Mr. Wake, in closing, draws attention to the important fact first noticed by Mr. Fiske, that owing to the prolongation of infancy children had to be nurtured by female parents aided by males to some extent; and to Mr. Spencer's remark that, "To the yearnings of natural affection are added in the early stages of progress, certain motives, partly personal, partly social, which help to secure the lives of children; but which, at the same time initiate differences of status between children of different sexes. There is the desire to strengthen the tribe in war; there is the wish to have a future avenger on individual enemies; there is the anxiety to leave behind one who will perform the funeral rites." Under the influence of these various ideas and circumstances, the custom of tracing kinship for certain purposes in the female line would be developed by the time that the habit had been formed of wives leaving their parents to reside among the husband's family. When this took place the custom would be fully established under the influence of polygamy, and the development of the gentile organization would almost necessarily follow. The primitive idea of kinship through the father would, however, still remain in full force with the attributes which originally appertained to it,

namely, the headship in the family group of the oldest male ancestor, whose authority is practically represented by the tribe, and the non-intermarriage of those thus connected.

GEOLGY AND PALÆONTOLOGY.

THE WATER SHEDS OF THE STATE OF NEW YORK.—The State of New York presents two of the most remarkable water-sheds on the North American continent, if not on the face of the globe. Though situated so near one another that their extremities may be said to almost interlock, they are widely different in their physical features and distribution of water supply. One has been made the mighty servant of man and is harnessed for his bidding, while the other bids defiance, gushing forth its waters at its will, sometimes flooding a vast area of territory, and again leaving its river-beds to dry in the sun.

The most powerful of these is drained by the Oswego river. Its area contains no less than seven thousand square miles of territory. It comprises the well-known chain of lakes, some of which are of considerable size and importance—the Oneida, Cayuga, Seneca, etc., amounting to over four hundred square miles of lake surface. Besides being in themselves natural reservoirs, the State has further improved Seneca lake so as to regulate the periodical flow of the water. The average flow of the water is thus secured at about 600,000 cubic feet per minute. Twenty miles above the mouth of the Oswego river is Three River Point. From this place, down stream, there is a fall of water amounting to seventy-five feet. This space is taken up by seven dams erected and maintained by the State. Of these, two are situated at Oswego, covering a fall of forty feet. These dams accord hydraulic privileges equal to 25,000 horse power. But a moderate outlay is required to keep the flow in the river near the average for the year. 75,000 cubic feet of this water supply are in actual use in Oswego, where a canal is provided for the reception which furnishes fifty runs of first class water and over seventeen of the second class.

Two dams are situated at Fulton with 20,000 horse power. At this point the water privileges are easiest available, although Oswego has the greater representation of industries.

The Oswego River water shed produces clear cold water, which is perfectly under control of man, no matter what the circumstances or exigences. The river bank forms a line teeming with industries, with millions of dollars of money invested. This water supply never endangers the lives of citizens or encroaches on their property, but on the contrary, affords a roadway for inland navigation through the canals which it feeds.

Not so the other subject of this paper. Situated on the highest point in New York, among the Adirondacks, it submits to no governmental check, but ejects its turbid waters, dashing down